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ABSTRACT

This document reports a survey instituted to compare the attitudes of students at a Christian college (Prairie Bible College) in Alberta, Canada with those of college students in general concerning the possible use of genetic manipulation. Comparison was made with the findings of a 1990 study by Geremia Veglia, et al., "Public Attitudes toward Human Genetic Manipulation: A Revitalization or Eugenics?" (ED 327 408). The survey was divided into three parts: (1) one measuring the response and acceptance of genetic engineering; (2) the second measuring the response and attitudes toward negative eugenics; and (3) one seeing what, if any, social opinions could influence or rationalize their participation in genetic engineering. These parts of the survey employed the same questions as the study by Veglia. A fourth part was added to measure whether the academic program, length of Christian college study, age, sex, marital status, and parenting had any influence on opinions about genetic engineering. The students at Prairie Bible College, when asked if, as prospective parents they would welcome a program to correct genetic deficiencies, disagreed or strongly disagreed at a rate of 54 percent. Males were in opposition at a rate of 57.5 percent, and females at a rate of 51 percent. This was opposed to the original Veglia survey in which 74.1 per cent of respondents would welcome such a program. The paper concludes that the Christian convictions of the subjects made them much more opposed to genetic manipulation than college students in general. Openness to genetic engineering showed an inverse relationship to the amount of study completed at the Christian college. (DK)

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PRAIRIE
BIBLE COLLEGE

ED 368 619

ATTITUDES OF
PRAIRIE BIBLE COLLEGE STUDENTS
TOWARD HUMAN GENETIC MANIPULATION

A Survey and Comparative Study

Conducted by the

Contemporary Issues in Christianity Class

April 1993

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Abstract

The purpose of this survey was to compare the attitudes of students at a Christian college (Prairie Bible College) with those of college students in general concerning the possible use of genetic manipulation. Comparison was made with the findings reported in a 1990 paper by Geremia Veglia, et al., "Public Attitudes toward Human Genetic Manipulation: A Revitalization or Eugenics?" (ED 327 408). The survey was divided into three parts: the first to measure the response and acceptance of genetic engineering; the second to measure the response and attitudes towards negative eugenics; and third to see what, if any, social opinions could influence or rationalize their participation in genetic engineering. These parts of the survey employed the same questions as the study by Veglia, et al. A fourth part was added to measure whether the academic program, the length of Christian college study, age, sex, marital status and parenting had any influence on opinions about genetic engineering.

THE IMPORTANCE OF THIS STUDY

As an integral component of human life-form development, genetics is worthy of priority research and investigation. We have only to consider the extent of talent and resources currently dedicated to discovery in this biomedical science to realize just how significant it really is. On a global basis, it is now the rule rather than the exception that major hospitals practice some degree of research activity in the field of genetics.

On the surface, genetics sounds like a rather harmless subject; most people think it refers only to how the combination of our parents' genes result in how we look and act. Few people see beyond the immediate focus to what can be a very unsettling larger picture.

The importance of genetic engineering is multifaceted, including the following considerations: (1) In our drive to fight disease, eliminate pain and suffering, and to generally "live longer," will we be creating a new caste system across the entire human race? (2) Do we have the right, through genetic manipulation, to help some forms of life while hindering others? (3) Genetic engineers already boast that they can clone a human being; the challenge now is to create the superman and superwoman to copy! But, who will make the rules? Who will protect the innocent?

The implications of where genetic engineering could lead the human race are staggering. Investigation of this topic may not simply be important, but more so a duty and responsibility of mankind.

THE PURPOSE OF THIS STUDY

A survey on attitudes toward genetic manipulation was conducted on a number of college campuses across the USA, and reported in a paper presented at the Fifth National Technological Literacy Conference at the National Association of Science, Technology and Society, February 2-4, 1990, Arlington, VA (ERIC Document 327 408) by Geremia Veglia, Brian R. Shmaefsky, and Walter Johnson. Readers should consult that study for a discussion of the implications of research in this area. We have not repeated here the ramifications of social acceptance of these technologies which were outlined there.

Our primary purpose for conducting this same survey is to compare the attitudes of students from a Christian college (PBC) with those of college students in general as reported in the above study.

The survey was also designed to reveal whether and to what extent a number of factors--PBC program, length of College study, age, sex, marital status, and parenting--bear upon student attitudes toward genetic manipulation.

METHODOLOGY

The survey instrument followed the same pattern as the aforementioned study in order to provide data for comparison. Three general areas of investigation were included as well as a section for demographic profile.

The first area related to the students personal acceptance of genetic engineering, the second to attitude toward negative eugenics, and the third to "social

attitudes that could influence or provide rationale for their participation in a genetic engineering program." A five point Likert Scale was employed to register agreement or disagreement.

The demographic profile related only to Prairie Bible College students. The survey provided a comparison of attitudes between the two populations and information concerning specific characteristics of the local college student body.

A computer generated random sample of one hundred and fifty students was surveyed by mail. The cover sheet bearing the student's name and address could be removed before returning to preserve anonymity.

Eighty six valid survey forms were returned, a return of 57.3%.

DATA AND ANALYSIS

Prairie Bible College students, when asked if, as prospective parents they would welcome a program to correct genetic deficiencies, disagreed or strongly disagreed at a rate of 54%. Males were in opposition at a rate of 57.5% and females at a rate of 51%. This is opposed to the original survey in which 74.1% of respondents would welcome such a program.

Questions 1-6 were given as a completion to the following proposal:
Given new genetic technologies that would make it possible to start up a program in which mental or physical genetic deficiencies could be corrected before conception, and performed at a reasonable cost,

Q1: Prospective parents who did not participate in such a program would be foolish.
Q2: As a prospective parent I would welcome such a program.
Q3: If an unborn child were tested and found to have genetic defects, the prospective parents should terminate the pregnancy and try again.
Q4: Were it possible to increase the intelligence of the unborn child, as a prospective parent I would be foolish not to have it done.
Q5: If it were possible to increase the muscles or related physical characteristics of an unborn child, as a prospective parent I would be foolish not to have it done.
Q6: Were it possible to select skin tone, hair color, eye color or appearance before conception, I would consider having it done.

Table 1

Prairie Bible College Students
Respondents That Disagreed Or Strongly Disagreed
With Personal Acceptance Questions In Percents

	Q1	Q2	Q3	Q4	Q5	Q6
Males	84.0	57.5	100.0	84.6	84.6	92.5
Females	65.3	51.0	93.8	83.7	87.7	91.8
Male/Female Combined	74.2	54.0	96.6	84.1	86.4	92.1

Prairie Bible College Students
Respondents That Agreed Or Strongly Agreed
With Personal Acceptance Questions In Percents

	Q1	Q2	Q3	Q4	Q5	Q6
Males	5.0	20.0	0.0	15.4	5.1	2.5
Females	8.1	26.5	2.1	16.3	2.0	2.0
Male/Female Combined	6.7	23.6	1.1	15.9	3.4	2.2

U.S. College Students
Respondents That Agreed Or Strongly Agreed With
Personal Acceptance Questions In Percents

	Q1	Q2	Q3	Q4	Q5	Q6
Males	48.6	72.7	19.2	40.1	33.9	19.2
Females	48.9	76.4	14.3	28.7	21.3	14.0
Male/Female Combined	48.6	74.1	16.8	33.8	27.1	16.3

The difference between male and female PBC respondents was negligible for Q4 in relation to increasing intelligence but females showed a stronger tendency to object to enhancement of physical characteristics than males by 3.1%. Compared to the original study in which 30% were willing to consider genetic manipulation for enhancement, we see that PBC students gave a very different response.

There was a large difference in opinion between males and females regarding the first question. Males disagreed at a rate of 18.7% more than females. It was interesting to note that male respondents were in general more likely to answer "strongly disagree" than "disagree" if they were in opposition to the statement, whereas females were more evenly divided between the "strongly disagree" and "disagree" categories (e.g., Q4: Males: strongly disagree: 59.0% disagree: 25.6% ; Females: strongly disagree: 44.9% disagree: 38.8%).

An overwhelming majority of PBC students, when asked if prospective parents should terminate the pregnancy if an unborn child were found to have genetic defects, said "no." Males were 100% in opposition, while females were 93.8% in disagreement (2.1% of females responded with agree; 4.2% neutral). This is quite different from the original study in which 16.8% of respondents agreed or strongly

agreed that the pregnancy should be terminated.

Table 2

Percentage of Prairie Bible College Respondents
Answering Disagree or Strongly Disagree
To Questions 1-6 According To The Number Of Credits Taken

Credits	Q1	Q2	Q3	Q4	Q5	Q6
15 or less	73.7	32.1	89.5	68.5	63.1	84.2
16 - 29	65.4	50.0	100.0	84.6	92.3	96.1
30 - 59	80.0	75.0	100.0	95.0	95.0	100.0
60 or more	79.1	100.0	95.8	87.0	91.3	87.5

The majority of the respondents to the survey either disagreed or strongly disagreed with the options listed. An interesting thing to note is that those respondents with between 30-59 credits demonstrated the most "conservative" view, while those with 15 credits or less represented the more "liberal" stand.

Question #2 had the most variety in answers. It seems that the more Bible training the respondents had, the less likely they were to express satisfaction with the proposal.

As demonstrated by the response to question #3, it is evident that the sanctity of human life is felt to be of utmost importance. Regardless of the "quality" of life a child will experience, it has been represented that he\she should not be aborted.

Questions 7-9 are based upon the proposal:
People who are found to have non-correctable genetic defects should be sanctioned.

Q7: Individuals found to have those genetic defects should not be allowed to marry.

Q8: Individuals found to have those genetic defects should be allowed to marry but not to have children.

Q9: Individuals found to have those genetic defects should be sterilized, whether they were married or not, so that they could not have children.

Table 3

Prairie Bible College Students
Respondents Attitudes Toward Sanctions Of Carriers
Of Genetic Deficiencies By Percentage
Of Those Who Disagreed Or Strongly Disagreed.

	Q7	Q8	Q9
Male	77.5	60.0	69.2
Female	91.9	75.0	81.2
Male/Female Combined	85.4	68.1	75.8

U.S. College Students
Respondents Attitudes Toward Sanctions Of
Carriers Of Genetic Deficiencies By Percentage
Of Those Who Disagreed Or Strongly Disagreed

	Q7	Q8	Q9
Male	85.8	67.1	79.1
Female	90.2	75.4	80.9
Male/Female Combined	88.3	71.6	80.1

The overwhelming response by males and females was negative to sanctioning. Females disagreed more strongly to sanctioning than males. The strongest disagreement was in the area of not being allowed to marry. This shows that most respondents feel that marriage should be allowed, but not as many were eager to let

these same people have children.

On all of questions 7-9, U.S. college students were more opposed to sanctions than Bible College students by a narrow margin.

Table 4

PBC Respondents Who Disagreed Or
Strongly Disagreed To The Above Questions
According To Credits Earned.

Credits	Q7	Q8	Q9
15 or less	84.3	73.7	73.7
16 - 29	88.5	73.0	73.0
30 - 59	85.0	70.0	70.0
60 or more	83.3	56.5	86.4
All credits combined	85.4	68.2	75.9

None of the Bible College students strongly agreed to any of the three statements. The largest response from married students was neutral, but since the number of married respondents was only thirteen, it is difficult to draw conclusions.

The last five questions were designed to measure the respondents' rationale for their acceptance or rejection of a genetic engineering program, if such a program were implemented.

If such a genetic engineering program were implemented in our country:

Q10: Society would benefit because of the greater number of healthier, smarter people.
Q11: Raising children would become easier with healthier, smarter children.
Q12: The general public would be safer, and there would be less crime with the greater number of healthier, smarter people.
Q13: Society would benefit because there would be less need for mental hospitals.
Q14: The economy would benefit from such a program because people of higher intelligence would develop new technologies.

Table 5

U.S. College Students
Respondents Answering Agree Or Strongly Agree
To Questions Of Rationale In Percents

	Q10	Q11	Q12	Q13	Q14
Males	43.6	32.5	14.5	27.9	37.9
Females	30.5	17.7	10.7	20.4	26.4
Male/Female Combined	36.3	24.4	12.4	23.7	31.5

Prairie Bible College Students
Respondents Answering Agree or Strongly Agree
To Questions Of Rationale In Percents

	Q10	Q11	Q12	Q13	Q14
Males	7.5	5.0	0.0	5.0	18.0
Females	8.2	14.3	2.0	4.1	16.3
Male/Female Combined	7.9	10.1	1.1	4.5	16.8

Prairie Bible College students decidedly disagreed with the proposed rationale. The level of agreement by Prairie Bible College students was significantly lower than that of U.S. college students in general.

The U.S. study showed about 10 percent more males than females to be in

agreement, but this pattern was not evident among Prairie Bible College students. The indication is that Bible college students deem social behavior to be less genetically based than do college students in general.

Table 6

Prairie Bible College Students
Respondents Answering Disagree or Strongly Disagree
To Questions Of Rationale In Percents

Credits	Q10	Q11	Q12	Q13	Q14
15 or less	52.6	57.9	89.5	73.6	42.1
16-29	65.4	76.9	96.1	65.4	65.4
30-59	75.0	85.0	90.0	55.0	60.0
60 or more	70.8	95.9	95.6	75.0	65.2

The majority of PBC students disagreed with rationale statements; the degree of disagreement was charted (Table 6) by number of credits earned. Response to the first set of questions (1-6) showed a trend toward conservatism with increasing credits earned, but the same pattern was not apparent in the second set (7-9) or in the third set of questions (10-14).

Table 7

Respondents That Answered Neutral
To Questions 4 To 6 And 10 To 14 In Percents.

	Q4	Q5	Q6	Q10	Q11	Q12	Q13	Q14
U.S. College Students	24.4	25.5	19.3	28.3	25.0	22.6	30.2	34.9
PBC Students	12.5	10.2	5.6	25.8	10.1	5.7	28.1	23.9

The mean average for PBC neutral answers was 15.2 as compared with 26.3 percent for U.S. college students. PBC students registered significantly less indecision. For both groups questions 6 and 12 registered the fewest undecided responses and questions 13 and 14 the most.

CONCLUSION

The views of the students on this Bible college campus are in strong disagreement with genetic manipulation and the sanctioning of those with defective genes. These students also feel strongly that genetic manipulation will not necessarily increase quality of life, nor is it ethically appropriate.

These views are in contrast to those of U.S. college students in general. The inference to be drawn from this is that the Christian convictions of Prairie Bible College students make them much more opposed to genetic manipulation than are U.S. college students in general.

Openness to participating in a program of genetic engineering showed an inverse relationship to the amount of study completed at PBC. It would be interesting to compare this with similar data from college students in general. It is uncertain how much the difference in attitude exhibited by PBC students at different stages of their education is due to general level of maturity and how much to increasing understanding of Christian ethical principles.

Only thirteen of the respondents were married. It would be interesting to

measure the difference in attitudes, if any, among married students with and without children. The number of respondents was also too small to determine whether there was any appreciable difference in attitudes among students in different academic programs. Further study could be done to determine whether the pattern of attitudes at Prairie Bible College is typical of students at similar colleges.